DRAWING AMENDMENTS (Other than Those Requested on Form PTO-948)

Drawing amendments are provided on separate sheets accompanying this Response.

REMARKS

1. The Amendments and the Support Therefor

No claims have been canceled, six new claims (25-30) have been added, and claims 2, 12, and 14-23 have been amended to leave claims 1-30 in the application. The accompanying PTO-2038 authorizes a charge for the newly-submitted claims in excess of the amount previously paid for, with the fee due being calculated as follows:

FEE CALCULATION

For	Already Paid	No. Extra	Rate (SMALL ENTITY)	Fee (SMALL ENTITY)
Total Claims	30 - 24 =	6	x $9 =	$54
Independent Claims	4 - 3 =	1	x $42 =	$42
			Total:	$96

No new matter has been added by the amendments or new claims. For your convenience, following is a summary cross-referencing the new claims to exemplary portions of the specification disclosing the recited structure:

Claim 25: Claim 2

Claim 26: Claim 1

Claim 27: Claim 2

Claim 28: Claim 7

Claim 29: Claim 8

Claim 30: Claims 2, 8 and 13

Further comments regarding the new claims are set out below at Section 9 of this Response.

2. Election/Restriction

Please note that no restriction requirement was issued; rather, the last Office Action was understood to set forth a requirement for election of species as per MPEP 809.02 / 37 CFR 1.146. Thus, claim 9 should not be withdrawn until its parent claim is finally rejected.

3. Claim Objections

The claim objections are addressed by the accompanying amendments.

4. Drawing Objections

The drawing objections are addressed by the accompanying amendments.

5. Specification Objections; §112(1) Claim Rejections of Claims 6, 12 and 13

These objections and rejections require reconsideration. Note that an "active area" is an area which contains the lines of an anode *and* the spaces between these lines, and thus when particles impinge upon an active area, some fall on the leads and others pass through. Thus, it is typical in this field for artisans to speak of a second anode/delay line as receiving particles "from" a first anode/delay line, or otherwise discuss how particles impinge on the first anode/delay line active area and then subsequently impinge on the second anode/delay line active area, etc.; it is accepted that some particles fall on the first and do not pass to the second, while others pass from the first to the second. To illustrate, please refer to (for example) column 6 lines 16-19 of *Wollnik et al.*:

> The windings of the x-meander 13 are arranged in an interspersed fashion behind the windings of the y-meander 39 so that a relatively narrow electron cloud be simultaneously intercepted by the Windings of both meanders.

In other words, it is well known that when a "spray" of particles falls on the active area of a first anode/delay line, some will pass through to the second anode/delay line, and some will not.

Looking then to the objection to the specification, the specification does discuss the objected matter, and defines an active area as an area that receives particles (see, e.g., page 10 lines 3-4, defining an "active area" as "the area over which the delay line receives particles"). Similarly, regarding the §112(1) rejections of claims 6, 12, and 13, the claimed arrangement is fully described in the specification, is fully enabled, and is claimed in a manner such that one of ordinary skill would understand the scope of the matter claimed. Thus, it is submitted that all requirements of §112 are met.

Note that in view of the foregoing, claim 13 and its dependent claims 14-23 should be

plainly allowable since claim 13 contains the limitations of claim 8 (which has been objected to, but indicated as allowable).

6. Rejection of Claims 1, 2, 4, 5, 6, 10, 11, and 12 under 35 USC §102 in view of U.S. Patent 5,644,128 to *Wollnik*

With all respect, *Wollnik* is misunderstood, and is not anticipated by the present claims. As acknowledged at page 1 line 23 onward in the present application, *Wollnik* exemplifies a conventional delay line arrangement, and thus it contains a number of the disadvantages which are described in the present application as being overcome by the claimed arrangement. Looking to FIG. 4A of *Wollnik et al.*:

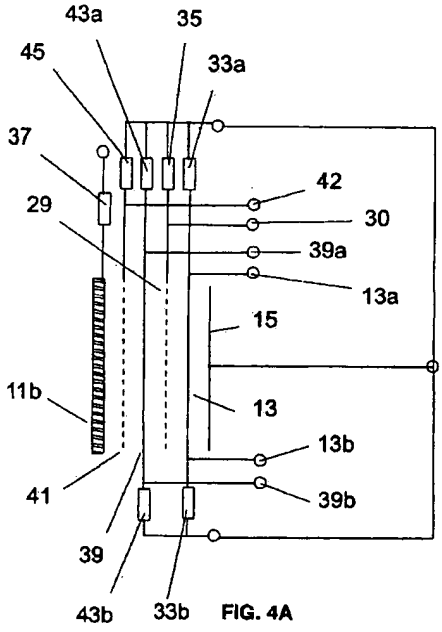

FIG. 4A

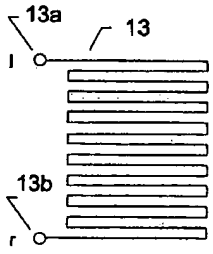

FIG. 4B

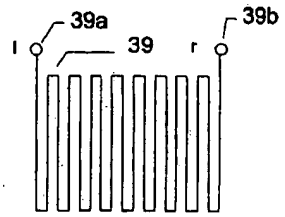

FIG. 4C

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FIG. 4A shows a two-dimensional anode readout used for the simultaneous time and position determination. The two dimensional configuration includes two meandric structures, an x-meander 13 and a y-meander 39 arranged at an angle, preferably perpendicularly, relative to one another. Each meander exhibits a plurality of parallel spaced windings configured to delay an atomic particle signal as a function of the position of the electron cloud behind the channel plates. The windings of the x-meander 13 are arranged in an interspersed fashion behind the windings of the y-meander 39 so that a relatively narrow electron cloud be simultaneously intercepted by the Windings of both meanders. A decoupling grid 29, connected to ground or reference potential by a resistor 35, is placed between the x-meander 13 and the y-meander 39 to reduce detrimental cross-talk between the first orthogonal y-meander 39, and the second triplate x-meander 13. A timing signal is taken from the timing out node 30 of the decoupling grid 29. A grounded back plate 15 is situated behind the triplate x-meander. A second grid 41 having a timing out node 42 may be placed between the channel plate 11*b* and the y-meander 39 to further improve the timing signal.

Each end of the x-meander 13 and the y-meander 39 is connected to a reference potential by resistors 33*a*, 33*b* and 43*a*, 43*b*, respectively. The resistors 33*a*, 33*b*, 43*a*, and 43*b* exhibit a surge impedance approximately equivalent to the surge impedance of the respective x-meander 13 or y-meander 39. Grids 29 and 41 may also be connected to the reference potential by resistors 35 and 45 which also exhibit a surge impedance approximately equivalent to the surge impedance of the respective meanders.

Note from FIG. 4A that *Wollnik*'s X-meander 13 and Y-meander 39 are conductively joined to each other (and to back plate 15) through resistors 33a, 33b, 43a, and 43b (see column 6 lines 30-39). The back plate 15 is at ground (see column 5 lines 24-25), i.e., this is the ground plane for

each anode.[1] Note that the spacing between each signal line/meander, and the spacing between each signal line/meander and the ground, has a strong impact on the impedance for a delay line (i.e., for a coupled signal line and meander); see, for example, the discussions in the present application, e.g., at page 5 lines 18-26, page 8 line 24-page 9 line 16, etc. In turn, the impedance of each delay line, and impedance matching between a delay line and the timing/measurement components of a detector, will have a strong effect on the speed, sensitivity, and accuracy of a detector (again see the Applicant's Background discussion). This is why *Wollnik* engages in very precise (and fixed) spacing between each signal line/meander 13 and 19 and their ground 15 (see, e.g., column 5 lines 54-56).

Claim 1 recites that the "first and second delay line anodes [are] adaptably mounted in spaced relation to have adjustable spacing therebetween", meaning that one signal line/ground has adjustable spacing with respect to the other signal line/ground. Anticipation under 35 U.S.C. §102(b) requires that each and every limitation recited by the claim be found in a single prior art reference,[2] a condition which is not present here since there is no disclosure whatsoever in *Wollnik* describing its delay line anodes (i.e., its signal line/meander pairs) being adaptably mounted to have adjustable spacing. If the rejection is maintained, kindly provide a specific indication of where *Wollnik* describes such adjustable spacing, since a *prima facie* case of anticipation under §102 is not made without identifying the allegedly anticipating matter.[3]

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[1] Note that a "delay line anode" consists of a signal line coupled to a ground, see page 2 line 22 onward of the present application, and thus *Wollnik*'s delay line anodes are (1) Y-meander 39 *plus* ground 15, and (2) X-meander 13 *plus* ground 15. While *Wollnik* occasionally seems to use the term "delay line" as referring to a meander *taken alone* – see, e.g., column 5 lines 23-25 – it is a meander/signal line *plus a ground* that defines a delay line.

[2] MPEP 2131. "To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim" (*Brown v. 3M*, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001); see also *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 58 USPQ2d 1286, 1291 (Fed. Cir. 2001); *Sandt Technology Ltd. v. Resco Metal and Plastics Corp.*, 60 USPQ2d 1091, 1094 (Fed. Cir. 2001)).

[3] MPEP 707.07(d); 37 CFR §1.104(c)(2); "it is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference." *Ex parte Levy*, 17 USPQ2d 1461, 1462 (Bd. Pat. App. & Int. 1990), *citing to Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick*, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984).

Further, the arrangement of claim 1 is not in any way obvious. *Wollnik* chooses the values of resistors 33a, 33b, 43a, and 43b so that the impedance between the delay lines is matched (see column 6 lines 30-39) - but if either signal line/meander 13 or 39 of *Wollnik* was moved, the impedance of its delay line (its coupling with the ground) would change, owing to the interplay between spacing and impedance. Its resistors would then fail to match impedance, and the *Wollnik* arrangement would fail to properly work. This is why *Wollnik* describes precise (and fixed) spacings. In short, *Wollnik* cannot be modified to have its signal lines/meanders 13 and 39 have adjustable spacing with respect to each other and/or with respect to ground 15, while still providing a working apparatus with matched impedance (again, refer to *Wollnik*'s column 6 lines 30-39). It cannot be obvious to make a modification to an apparatus where the proposed modification is contrary to the purpose of the apparatus; see, e.g., MPEP 2143.01 (subsection entitled "The Proposed Modification Cannot Render The Prior Art Unsatisfactory For Its Intended Purpose"). Thus, if the prior art is objectively reviewed without prior knowledge of the invention (i.e., without hindsight), it is seen that the teachings of the art do not lead one to the invention claimed.

Regarding claim 4, note that a delay line anode consists of not just a signal line/meander 13 or 39, but rather consists of a signal line/meander 13 or 39 *plus* its ground (here back plate 15); again, see page 2 lines 22-23 of the present application. *Wollnik*'s delay line anodes (i.e., its signal line/meander plus back plate pairs) are not identical, since each includes a different resistor 33a, 33b, 43a, and 43b in order to match impedance. Thus, claim 4 is not anticipated, nor is claim 4 obvious in view of *Wollnik* since it is in no way apparent how *Wollnik*'s delay lines could be identical while providing the matched impedance needed for operation. While the Office Action refers to FIGS. 4B and 4C of *Wollnik* as presenting identical anodes, these Figures in fact only depict the signal lines/meanders, and they do not depict the grounds (in *Wollnik*, the back plane) or any intervening structure (i.e., the resistors) - in short, FIGS. 4B and 4C do not depict the entire delay line anodes.

Regarding claim 5, generally the same comments apply as for claim 4: while the *signal lines/meanders* of FIGS. 4B and 4C might be interchangeable, it is in no way apparent how the

entire *delay lines* could be interchangeable while still providing a working device. The delay line which includes signal line 39 has its resistors 43a and 43b chosen to properly adjust the impedance in accordance with the distance between signal line 39 and ground 15, and similarly signal line 13 has its resistors 33a and 33b chosen to properly adjust its impedance in accordance with the distance between signal line 13 and ground 15. If the delay lines were interchanged, the resistors would be mismatched - they would not provide proper impedance - and the *Wollnik* detector would no longer properly function.

Regarding claims 10 and 11, there is in fact no disclosure of *Wollnik* including any flex circuit material. Note that "flex circuit" is a term of art referring to flexural circuit boards (see, e,g., page 14 lines 1-8, page 18 lines 15-17). This is not a standard wire winding as in *Wollnik*. Nothing in *Wollnik* suggests use of such material, and no advantage is apparent from its use in *Wollnik*.

7. Rejection of Claims 1, 3, and 24 under 35 USC §102 in view of FIG. 1 of the Present Application

Kindly reconsider these rejections, since FIG. 1 - which is clearly identified in the application as being a simplified schematic view of a prior detector (see, e.g., page 14 lines 21-22) - is misunderstood. As noted throughout the Background section of the present application, FIG. 1 presents a view of an arrangement such as *Wollnik*, but wherein the illustrated lines 108 and 110 are not merely *signal lines* (as in *Wollnik*); rather, each of the illustrated lines 108 and 110 is a *complete delay line anode* (i.e., each consists of a signal line *plus* an attached ground line, with a layer of dielectric material therebetween). In other words, FIG. 1 presents a detector as in *Wollnik et al.*, but wherein *Wollnik*'s back plate/ground plane is incorporated within the lines 108 and 110 themselves. As previously noted, such a detector has its signal lines (or more accurately its anodes) situated in precisely spaced planes, with the signal lines/anodes in fixed and unadjustable relation with each other (as exemplified by *Wollnik*). Such an arrangement is shown in greater detail in FIG. 2 (and discussed at page 7 line 10 onward), wherein the front/top anode (the front/top signal line with ground line) is fixed to the rear/bottom anode (the rear/bottom

signal line with ground line) *in unadjustable relationship by an intervening layer of dielectric 222.* Thus, claim 1 is not anticipated by any prior arrangements described in the Applicant's disclosure, since there is no description whatsoever of delay line anodes mounted in adjustable relationship. The claimed arrangements are in no way "admitted prior art"; kindly review page 8 line 13 onward, which review the disadvantages of the arrangements of FIG. 1 and *Wollnik*, and clearly note that the delay lines of these arrangements are spaced in fixed relation.

The same is true of claims 3 and 24; again, referring to the more detailed view depicted in FIG. 2, it is seen that the dielectric layer 222 is interposed between the first and second anodes and their active areas to set the first and second anodes in fixed relationship.

8. Objection to Claims 7-8

The indication that objected claims 7-8 are allowable if rewritten in independent form is noted and appreciated. It is requested that the objections be placed in abeyance pending reexamination of the application in view of the foregoing comments.

9. New Claims [NEW CLAIMS]

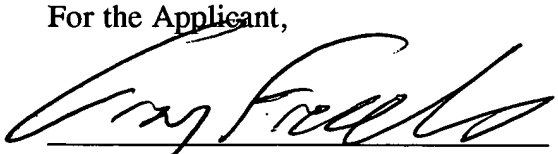
New claims 25-29, which ultimately depend from claim 24, are submitted to be allowable for at least the same reasons as claim 24.

New independent claim 30, which incorporates the limitations of claim 8 (among others), is submitted to be independently allowable for at least the same reasons as claim 8 (which was objected to but indicated as allowable).

10. In Closing

If any questions regarding the application arise, please contact the undersigned attorney. Telephone calls related to this application are welcomed and encouraged. The Commissioner is authorized to charge any fees or credit any overpayments relating to this application to deposit account number 18-2055.

For the Applicant,



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ATTACHMENTS:

- Amended Drawings (FIGS. 1-2)
- PTO-2038 ($151)